

WELCOME TO DOE'S *RCRA ORIENTATION FOR FACILITY MANAGERS* COURSEWARE

- Background** This module comprises one component of courseware materials that were developed by DOE's Office of Environmental Policy and Assistance, RCRA/CERCLA Division, EH-413, in response to a request from the Deputy Assistant Secretary for Nuclear and Facility Safety (EH-3). The original course was titled *RCRA Orientation for Nuclear and Facility Safety* and was presented on March 5, 1997, at Germantown, MD. Presentation materials were derived from the more formal three-day course titled DOE's *RCRA Orientation Workshop*, which was developed by EH-413 under a joint funding venture that included the Savannah River Site and the Albuquerque Operations Office.
- Courseware Content** Although derived from the three-day workshop, DOE's *RCRA Orientation for Nuclear and Facility Safety* (now titled *RCRA Orientation for Facility Managers*) was expanded by developing two new modules to meet the needs of Nuclear Safety Managers. One of the new modules (*Corrective Action*) compares and contrasts RCRA closure and corrective action with CERCLA remedial action by using Oak Ridge Reservation as an example of a radioactively contaminated site closed under RCRA, but undergoing remediation under CERCLA. The other module (*Emerging Issues*) offered a snapshot of the emerging regulations that were expected to impact the Department most dramatically. The remaining courseware modules include:
- Introduction to RCRA and Liability Overview,
 - Overview of Solid Waste Determination,
 - Overview of Hazardous Waste Determination, and
 - Permitting.
- PDF "Handout" files only, which contain the aforementioned modules, are designed to serve as stand-alone resources and are equipped with: (1) A list of module contents, (2) Module-specific enabling objectives; (3) Self-assessment questions and answers; (4) A module-specific regulatory citation/key word index; and (5) A module-specific cross-link table that identifies hypertext links to additional Internet resources for hazardous waste-related information.
- Using the Courseware Materials** Within the PDF Handout modules, users are encouraged to examine the module's Regulatory-Statutory Citation/Key Word Index to identify the availability and location of topics of interest. In contrast, users can simply "dig-in" and sequentially examine the courseware's content. For less extensive reviews or to download additional course presentation materials as needed, users can return to the [*RCRA Orientation for Facility Managers Home Page*](#) to access electronic files containing the remaining PDF Handout and/or Vugraph files.

To assist users in accessing additional Internet resources, where possible, module-specific hypertext links have been inserted into select points within each of the six PDF Handout courseware modules. Hypertext links appear in both the slide and notes portions as either *blue italicized text* (the first time a link to a particular resource is offered in a given module) or *green italicized text* (each subsequent link to that same resource) and have been assigned to terms and phases for which additional Internet resources such as other EH-413 guidance documents, other Internet Websites, etc. are available. Upon identifying a highlighted term or phase of interest, users generally can access the additional Internet resources by clicking on the highlighted text, which will then hypertext link to another Internet resource. Additional information for obtaining those resources that are not Internet-accessible as well as the objectives, content and organization, use, list of acronyms, Internet resources, and master index is presented in the [*Front-End Materials section*](#) (first section).

**Feedback
And
Contacts**

If you have difficulty in downloading or reviewing modules comprising DOE's *RCRA Orientation for Facility Managers*, [contact our Webmaster](#) and please [provide us with feedback](#). If you are interested in attending the three-day *RCRA Orientation Workshop*, please contact the [National Environmental Training Office](#). Additional questions concerning this courseware or the information presented therein may be directed to Atam Sikri of my staff by:

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Permitting -- Module P

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Additional Resources Cited in this Module (Internet-Accessible Unless Otherwise Noted)

Types of RCRA Permits, DOE/EH-413/9715; <http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permits.pdf>

Requirements for the Recycling of Hazardous Waste; DOE/EH-231-001/0990;
<http://tis-nt.eh.doe.gov/oepa/guidance/rcra/recycle.pdf>

Hazardous Waste Generator Requirements, DOE/EH-231-055/1194
(Revised August 1997); http://tis-nt.eh.doe.gov/oepa/guidance/rcra/gener_rv.pdf

Manifest Requirements, DOE/EH-231-038/0394 (revised);
http://tis-nt.eh.doe.gov/oepa/guidance/rcra/manif_rv.pdf

Exclusions and Exemptions from RCRA Hazardous Waste Regulation;
DOE/EH-231-034/0593; <http://tis-nt.eh.doe.gov/oepa/guidance/rcra/exclude.pdf>

Loss of Interim Status (LOIS) under RCRA, DOE/EH-231-0181/0992;
<http://tis-nt.eh.doe.gov/oepa/guidance/rcra/lois.pdf>

RCRA Permitting Guide for Hazardous and Radioactive Mixed Waste Management Facilities,
DOE/EH(RCRA)9705; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permit_a.pdf

General Facility Standard Requirements, DOE/EH-231-043/1294;
[NOT available on the OEPA Website]

Preparation of RCRA Waste Analysis Plans (Interim), DOE/EH-0306
[NOT available on the OEPA Website]

Federal Environmental Inspections Handbook, DOE/EH-0220;
http://tis-nt.eh.doe.gov/oepa/guidance/rcra/inspect_all.pdf

RCRA Contingency Plans and Emergency Procedures, DOE/EH-231-006/0991
<http://tis-nt.eh.doe.gov/oepa/guidance/rcra/cplans.pdf>

Preparation of RCRA Contingency Plans, DOE/EH-0274
[not available on the OEPA Website]

Management of Hazardous Waste Containers & Container Storage Areas under RCRA,
DOE/EH-0333; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/container/contain_all

Resource Conservation and Recovery Act Hazardous Waste Tank Systems,
DOE/EH-413/9716; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/tanks/tanks_all.pdf

Consolidated Departmental Response to Revised Standards for Hazardous Waste Combustors;
Notice of Proposed Rulemaking (NPRM), 61 FR 17358,
<http://tis-nt.eh.doe.gov/oepa/comments/rcra/cbs-rule.pdf>

RCRA Air Emission Standards for Hazardous Waste Treatment, Storage, and Disposal
Facility (TSDF) Process Vents, DOE/EH-231-020/0193;
<http://tis-nt.eh.doe.gov/oepa/guidance/rcra/vents.pdf>

RCRA Air Emission Standards for Hazardous Waste Treatment, Storage, and Disposal
Facility (TSDF) Equipment Leaks, DOE/EH-231-019/0193;
<http://tis-nt.eh.doe.gov/oepa/guidance/rcra/equipmnt.pdf>

Organic Air Emission Standards; Revised Final Rule Issued, RCRA Regulatory Bulletin;
<http://tis-nt.eh.doe.gov/oepa/guidance/rcra/ccregbl2.PDF>

RCRA Subpart CC Organic Air Emission Standards Technical Amendment Questions and Answers;
DOE/EH (RCRA)-9701; <http://tis-nt.eh.doe.gov/oepa/guidance/rcra/ccinfobrief.pdf>

RCRA Subpart CC Organic Air Emission Standards: Tanks, DOE/EH-413/9801;
<http://tis-nt.eh.doe.gov/oepa/guidance/rcra/ccinfobrief.pdf>

OEPA Environmental Law Summary: Resource Conservation and Recovery Act;
http://tis-nt.eh.doe.gov/oepa/law_sum/RCRA.HTM

RCRA Closure and Post-Closure Plans, DOE/EH-231-009/1291;
<http://tis-nt.eh.doe.gov/oepa/guidance/rcra/pcplans.pdf>

Ground-Water Monitoring Under RCRA, DOE/EH-231-039/1193;
<http://tis-nt.eh.doe.gov/oepa/guidance/rcra/monitor.pdf>

Closure of Hazardous and Mixed Waste Management Units at DOE Facilities, DOE/EGD(RCRA)-002/0690 [NOT available on the OEPA Website]

RCRA Clean Closure Equivalency Demonstrations, DOE/EH-231-010/1291;
<http://tis-nt.eh.doe.gov/oepa/guidance/rcra/equivdem.pdf>

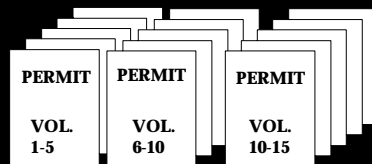
RCRA Post-Closure Permits, DOE/EH-231-021/0593 [NOT available on the OEPA Website]

Ignitable, Corrosive, Reactive, and Incompatible Wastes; DOE/EH-231-054/1294;
<http://tis-nt.eh.doe.gov/oepa/guidance/rcra/ignit.pdf>

Comments on Proposed Rule Establishing Air Emission Standards for Hazardous Waste Combustors, 61 FR 17358, 05/23/97; <http://tis-nt.eh.doe.gov/oepa/comments/rcra/combust.pdf>

RCRA Expanded Public Participation - Final Rule, RCRA Regulatory Bulletin dated January 31, 1997; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/public_p.pdf

Permitting



Facilities that store quantities exceeding 55 gallons for longer than 90 days or that treat or dispose of hazardous waste must be authorized to conduct these activities. Such authorization is referred to as a hazardous waste permit.

By the end of this module, you should be able to:

1. Define treatment, storage, and disposal; (p. P-2)
2. List several permit exemptions; (p. P-3)
3. Distinguish between interim-status and permit standards; (p. P-4)
4. Recognize the elements of a Part A application; (pp. P-5 to P-7)
5. Recognize the elements of a Part B application; (p. P-12 to P-18)
6. Explain when the Part A process applies and when the Part B process applies; (p. P-4)
7. List several of the types of permitted units; (pp. P-15 to P-19)
8. Define closure and post-closure care; (p. P-14)
9. List the seven steps in the permitting process; (pp. P-12 and P-20) and
10. Explain, in general, when permit modifications are required (pp. P-23 and P-24).

RCRA Requires a Permit for TSD:

- **Treatment:** Changing physical, chemical, or biological character or composition.
- **Storage:** Holding waste temporarily before treatment, disposal, or storage elsewhere.
- **Disposal:** Discharging, depositing, injecting, dumping, spilling, leaking, or placing any solid or hazardous waste into or on land or water.

Facilities that treat, store, or dispose of hazardous waste (TSDFs) and do not meet any of the exclusions from permitting, which will be discussed shortly, must have a hazardous waste permit.

- **Treatment:** “any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste nonhazardous, or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.”
- **Storage:** “the holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere.”
- **Disposal:** “the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any water, including groundwaters.”
- **Facility:** “all contiguous land, and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combinations of them).” (40 CFR 260.10)

Exclusion from Permitting

- A facility subject to the special exemptions for *recyclable materials* in 40 CFR Part 266
- *Generators* storing waste on-site in compliance with accumulation requirements
- Owners or operators of “totally enclosed treatment facilities,” “wastewater treatment units,” and “elementary neutralization units”;
- Persons engaged in containment for an immediate response to an emergency
- Transporters storing *manifested* wastes at a transfer facility for less than 10 days

The regulations should be consulted for the precise scope of these *exclusions*. [See 40 CFR 264.1(g) and 265.1(c).] Also, some States may not offer all of these exclusions. It is important to consult your State regulations.

The following briefly discusses the items identified on the slide:

- Under 40 CFR 266, EPA establishes alternative standards that exempt facilities from certain requirements when they are *recycling*. For example, facilities storing hazardous waste before recovering precious metals from them may store the waste without a permit. Remember that the regulations only address certain precious metals such as silver and gold.
- *Generators* must comply with standards for waste accumulation in tanks or containers under 40 CFR 262.34 to qualify for the exemption from permitting an accumulation point.
- Hazardous waste regulation defines the units referenced above (totally enclosed treatment facility, wastewater treatment unit, and elementary neutralization unit) under 40 CFR 260.10. The exclusion from permitting only applies to units that meet the prescribed definitions.

The other items on the list are more self-explanatory.

RCRA Provides Two Permitting Approaches:

- Facilities in existence on the effective date of a rule may operate under *interim status*
- New facilities, and eventually interim status facilities, must apply for a *Part B permit* (i.e., a full RCRA permit)

Facilities that do not qualify for an exclusion must obtain a permit. A permit defines operating and administrative conditions that facilities must meet to manage hazardous waste. Because the requirements are complex, the statute and the rule provide for two permitting avenues: interim status and Part B permitting.

Interim status is only available to facilities in existence on the effective date of the rule that makes them subject to regulation [40 CFR 265.1(b)]. In the case of TSD facilities that become newly regulated under Subtitle C, facilities who have not previously notified the EPA/State must submit a *Notification of Regulated Waste Activity* (Form 8700-12) within 90 days of the publication of the regulation in the Federal Register.(FR) [RCRA section 3010(a)]. In addition, a Part A application must be submitted within six months of the publication or 30 days after they first become subject to the promulgated standards. The Part B application for existing facilities may either be voluntarily submitted or called in by the regulator. A special requirement applies to land disposal facilities that become subject to Subtitle C in this manner -- they must submit a Part B within 12 months of becoming subject to Subtitle C requirements or *lose interim status*. [40 CFR 270.10(e)]

New facilities must obtain a *permit* and must meet site-specific requirements that are documented in the permit. These site-specific requirements encompass the same general categories as those for interim-status facilities. The permit, however, is more specific in how these standards apply to the specific facility. Unlike existing facilities, new facilities must submit Parts A and B permit applications simultaneously and are ineligible for interim status. Applications must be submitted at least 180 days before construction is expected to begin. [40 CFR 270.10(f)]

What Must I Do for Interim Status?

- Use regulations in 40 CFR 265 to understand requirements that must be met to be allowed to conduct hazardous waste activities.
- Follow provisions in 40 CFR 270 Subpart G
- Use regulations in 40 CFR 270 to understand the permitting process.

To obtain interim status, a facility must submit a notification and a Part A permit application to EPA/State. Until a permit is issued, interim-status facilities must operate according to the administrative provisions and operating conditions defined in 40 CFR Part 265.

In addition, interim status owners/operators must remain cognizant of the provisions governing operation during interim status, changes at an interim status facility, and termination of interim status found in subpart G of the 40 CFR part 270.

The *permitting process* for both interim-status and permitted facilities is codified in 40 CFR 270.

Interim-Status Facilities Must Submit a *Part A Application* in Accordance with 40 CFR 270.13 That Includes:

- Activities conducted that require permit
- Facility name, address, and location
- SIC codes that best reflect type of industry
- Operator's name, address, phone, ownership status, and status as Federal, State, private, public, or other entity
- Name, address, and telephone of facility owner
- Whether facility is on Indian land
- Whether the facility is new or existing and whether it is a first or revised application

Part A applications follow a standard format and typically are available through the State regulators. Applications are submitted to either the State permit authorities or EPA Regional Offices and the State, depending on the authority underlying the new regulations.

Contents of *Part A Application* (cont'd)

- Scale drawing and photograph showing structures and TSD areas
- TSD processes to be used
- The hazardous wastes to be managed, their quantities, and processes used for them
- A listing of all permits or approvals under certain other laws
- A topographic map depicting facility intakes, discharges, and wells
- Brief description of nature of business

For new facilities, the Part A permit must be submitted with the Part B permit at least 180 days before construction is expected to start. Existing facilities that become newly regulated must submit a notification and Part A application alone and operate under interim status as long as they comply with, at a minimum, the general facility standards and unit-specific standards prescribed in 40 CFR Part 265.

40 CFR 265 Requirements Include *General Standards* for All TSDFs

- Identification number
- *Waste analysis plan*
- Security
- General *inspection* requirements (specific requirements for particular units also apply)
- *Preparedness and prevention*
- *Contingency planning*
- *Manifests*

In addition to submitting a Part A application, interim-status facilities must operate in compliance with the standards outlined in 40 CFR Part 265. These include general requirements, as noted in the slide, that apply to all types of TSDFs (e.g., incinerators, container storage units, etc). Part B-permitted facilities must also comply with *general facility standards*, which are codified in 40 CFR Part 264, and reflect the standards identified for interim-status facilities.

And Specific Design, Operating, and Closure Standards Developed for:

- **Containers** (40 CFR 265 Subpart I)
- **Tanks** (40 CFR 265 Subpart J)
- Surface impoundments (40 CFR 265 Subpart K)
- Waste piles (40 CFR 265 Subpart L)
- Land treatment units (40 CFR 265 Subpart L)
- Landfills (40 CFR 265 Subpart N)

The interim-status requirements (40 CFR Part 265) include specific design and operating standards that must be met to conduct waste management activities in different types of units. For example, Subpart I defines **container storage requirements**. Such requirements include ensuring that containers are closed except when adding or removing wastes, ensuring containers are compatible with contents, and ensuring incompatible chemicals are segregated.

Many of the requirements are the same between interim-status and Part B-permitted facilities. There are differences, however. For instance, the requirements for “Containment” in Part 264 do not appear in Part 265. The Part 264 requirements call for such things as a base underlying the containers that is impervious and designed and operated to drain and remove liquids resulting from spills or leaks. Other requirements relate to the capacity of the containment system and removal of spilled waste from the system. (See 40 CFR 264.175.) The corresponding section in Part 265 is marked “Reserved” meaning that for now there are no containment requirements for interim status container facilities.

Design, Operating, and Closure Standards Developed for: (cont'd)

- **Incinerators** (40 CFR 265 Subpart O)
- Thermal treatment (40 CFR 265 Subpart P)
- Chemical, physical, and biological treatment (40 CFR 265 Subpart Q)
- Underground injection wells (40 CFR 265 Subpart R)
- Drip pads (40 CFR 265 Subpart W)
- Air emission standards (40 CFR 265 Subparts **AA**, **BB**, and **CC**)
- Containment buildings (40 CFR 265 Subpart DD)

The interim-status design and operating standards are self-implementing. A facility becomes subject to interim status under Subtitle C of RCRA because EPA publishes a new hazardous waste listing or identifies a new hazardous waste characteristic. Upon the effective date of the regulation, the facility must begin to apply the management standards prescribed for their unit(s) as well as comply with the administrative requirements identified in 40 CFR Part 265.

Recently, EPA amended the *air emission standards* applicable to *tanks*, surface impoundments, or *containers* that are used to manage hazardous wastes that have average volatile organic concentrations equal to or greater than 500 parts per million by weight (ppmw). (See revised 40 CFR 264.1082(c)(1) and 265.1083(c)(1) of the November 25, 1996 Federal Register (61 FR 59953, 59972)) Under these new regulations, owners and operators of these units must apply emission control devices (e.g., tanks equipped with a fixed roof and internal floating roof; surface impoundment with a rigid cover that is vented through a closed-vent system to a thermal vapor incinerator, flare, etc.).

HSWA Set Deadlines for Permit Issuance



- All facilities in existence on November 8, 1984, had to apply for permits by November 8, 1988.
- Facilities that failed to apply, *lost interim status* on November 8, 1992.

HSWA established permitting deadlines so that facilities could not operate indefinitely under interim status without applying for a permit. The deadlines were established under Section 3005(c) of the RCRA, as amended.

Facilities that were in existence on November 8, 1984, and that failed to apply for a permit, have lost interim status. Facilities that applied for a permit by the deadline can continue to operate until the EPA/State issues or denies the permit.

In contrast, some facilities were not subject to Subtitle C permitting on or before November 8, 1984, but were in existence on the effective date of statutory or regulatory amendments that rendered the facility subject to Subtitle C permitting (e.g., facilities that manage mixed waste only; facilities that managed waste exhibiting the characteristic of toxicity using the toxicity characteristic leaching procedure (TCLP) only). For land disposal facilities that are in existence on the effective date of statutory or regulatory amendments, owner/operators are required to submit a Part B permit application within 12 months after the date on which the facility became subject to Subtitle C permitting. (40 CFR 270.73(d)) For all other existing facilities, however, the regulators must request (I.e., call in) the Part B permit application.

What is Required for a *Part B Permit?*

- The information requirements of the Part B permit application (40 CFR 270.14 through 270.27) are tied to TSDF performance standards in 40 CFR 264.
- To obtain a permit, facilities must prepare a permit application that addresses *general facility requirements* and design and operating standards established in 40 CFR 264.
- After a period of review and modification, EPA/State can issue a Part B permit.

The requirements directing the information that must be submitted in a *Part B permit application* can be found in 40 CFR 270.14 through 270.27. These requirements can be viewed as two components: (1) General information requirements (40 CFR 270.14), and (2) Unit-specific information requirements (40 CFR 270.15 through 270.27). The information required by these components addresses the *general facility requirements* and design and operating standards established in 40 CFR part 264.

There are seven key steps in the Federal permitting process. These include:

- Preparing the application
- Conducting a pre-application meeting
- Submitting the permit application (Parts A and B)
- Reviewing the permit application
- Preparing the draft permit
- Taking public comment
- Finalizing the permit

Other than the first step, which entails each facility preparing its own application, Federal RCRA hazardous waste management permit (Part B) applications follow the “Procedures for Decision-making” prescribed in 40 CFR Part 124. EPA/States review the content of each Part B application (which is described on the following slides) and decide to approve or deny the permit application

Contents of Part B: General Requirements

- Description of facility and location
- Copy of operator training program
- *Closure plan* and cost estimate
- *Inspection schedule*
- *Chemical and physical analysis of wastes*
- Detailed topographic map
- Detailed groundwater protection information
- *Groundwater monitoring* information

The above list is only a short outline of the general requirements of the Part B permit content. You should consult the regulations to determine the full scope of the content requirements. See 40 CFR 270.14.

Among the most important items are the closure plan and the groundwater information. Both sets of information require extensive documentation as described in 40 CFR Parts 264.

Closure Plan

- Performance standards for closure include
 - minimize need for further maintenance
 - control, minimize, or eliminate contaminant escape
 - comply with specific standards for each facility type
- Closure must comply with a detailed closure plan and schedule approved by EPA or State
- Equipment, structures, and soils must be disposed of or decontaminated OR
- Post-closure monitoring and maintenance must be performed for at least 30 years

Closure and closure planning deficiencies have been a source of significant violations in DOE; therefore, we will briefly focus on them.

RCRA regulates the active life of a hazardous waste management unit, but RCRA's requirements do not end when the facility is taken out of service. In fact, specific requirements must be met to take a unit out of service (i.e., close the unit). *Closure of the unit* must be conducted according to an approved *closure plan*. A Professional Engineer must certify that closure was according to the plan.

Closure can be conducted under interim-status or Part B-permit standards. For facilities that obtained a Part B permit, the closure plan was incorporated and approved as a part of the permit.

Closure can involve decontaminating and/or disposing of all structures associated with the unit. Such closure is referred to as *clean closure*, subsequent to which RCRA requires no further monitoring or management. Although the precise meaning of decontamination is currently determined on a case-by-case basis, if structures or equipment are destined for land disposal, hazardous debris treatment technologies (e.g., chemical extraction) that result in a “clean debris surface” may be appropriate.

If, however, wastes remain in the unit (as they likely would remain in a landfill), RCRA requires management of the unit under a *post-closure care permit*. Facilities must monitor for releases from the unit and maintain the closed unit during a performance period of at least 30 years. A release occurring during that period would result in extension of the post-closure care period.

Contents of Part B: Specific Requirements

- Containers (40 CFR 264 Subpart I)
- Tank systems (40 CFR 264 Subpart J)
- Surface impoundments (40 CFR 264 Subpart K)
- Waste piles (40 CFR 264 Subpart L)
- Land treatment facilities (40 CFR 264 Subpart M)
- Landfills (40 CFR 264 Subpart N)

40 CFR Part 270 covers the permit program for TSDFs. Part 270 is closely linked with 40 CFR Part 264, which describes the operational, design, and *closure standards* for various types of TSD units. The permit application is a documentation of facility operations including the means of complying with standards in 40 CFR 264. To illustrate the connection between Part 264 and Part 270, consider two examples:

- Part 270.17 requires that operators submit information about how surface impoundment liners and cover systems will be inspected to ensure compliance with Part 264 inspection requirements.
- 40 CFR 264.177 requires that *incompatible wastes* not be stored in the same container unless certain precautions are taken that prevent accidental ignition or reaction of *ignitable or reactive wastes*. The permit requirement specific to containers in 40 CFR 270.15 requires that a description of the procedures used to ensure compliance with 40 CFR 264.177 be included in cases in which incompatible wastes are stored or otherwise managed in containers.

Contents of Part B: Specific Requirements (cont'd.)

- Incinerators (40 CFR 264 *Subpart O*)
- Process vents (40 CFR 264 *Subpart AA*)
- Equipment (40 CFR 264 *Subpart BB*)
- Air emission controls for tanks, surface impoundments, and containers (40 CFR 264 *Subpart CC*)
- Containment Buildings (40 CFR 264 Subpart DD)

Any facility that uses one or more of the units listed above (including those on the previous slide) must submit detailed information regarding the design, construction, operation, and maintenance of that unit in addition to the general content requirements described in 270.14.

Recent amendments to the permitting information requirements explicitly list the type of information that must be submitted by owners and operators of tanks, surface impoundments, or containers that are used to manage hazardous wastes possessing average volatile organic concentrations equal to or greater than 500 ppmw. (61 FR 59953, 59972) The required Part B application information focuses on documenting the types of control devices used to manage volatile organics.

Subpart X: Miscellaneous Units

- Covers technologies not covered by other standards such as
 - geologic repositories
 - open detonation unit
- Allows permitting based on specific design, operating, and monitoring requirements to be determined case-by-case

For hazardous waste management units that are not identified on the previous pages, facilities may seek a permit under Subpart X. Subpart X does not define design and operating standards. Instead, it requires that the TSDF meet the performance standard of protecting human health and the environment. In order to comply with the standard, permit applicants must demonstrate that the design and operating standards defined in the permit application are adequate to prevent releases to all environmental media. Thus, Subpart X permit applications can be more complex than conventional permit applications. On the other hand, Subpart X allows permitting of TSD activities that, because of lack of definition of design and operating requirements, could not otherwise obtain a permit.

Subpart X: Miscellaneous Units

- Requires analysis to prove that the design/operating parameters prevent releases that could have adverse affect
- Must consider
 - waste volume and characteristics
 - hydrogeologic setting
 - groundwater flow
 - groundwater and land use
 - potential migration of released waste constituents through all pathways

Subpart X permitting requires pathways analysis and risk assessment as tools to prove that the performance standard can be met with proposed design and operating procedures.

Other *Types of Permits*

- Permits-by-rule
- Emergency permits
- Hazardous waste incinerator permits
- Land treatment demonstration permits
- Permits for boilers and industrial furnaces burning hazardous waste
- Interim permits for UIC wells
- Research, development and demonstration permits
- *Post-closure permits*

Permit-by-rule: EPA issues permits under a number of different statutes. To avoid duplication of permit requirements, a permit-by-rule may be issued that eliminates the need for facilities to submit a full Subtitle C permit application when they are permitted under the Safe Drinking Water Act [underground injection control (UIC) permit]; Clean Water Act (NPDES permit); or the Marine Protection, Research, and Sanctuaries Act (Ocean Dumping permit). Facilities that have one of these permits need only meet a subset of the Subtitle C regulatory requirements.

Emergency permits: Subtitle C permitting is a lengthy process. In potentially dangerous situations that require immediate action, EPA can forego the normal permitting process. A temporary (90 days or less) permit may be issued to an unpermitted facility or to a permitted facility conducting emergency activities not covered by its existing permit.

Hazardous waste incinerator permits, land treatment demonstration permits, and permits for boilers and industrial furnaces burning hazardous waste: Normally, EPA issues permits to construct and operate new hazardous waste management facilities. Such facilities cannot be constructed until the permit is issued. The three types of units listed here are exceptions to this rule. Each must go through a trial period during which their ability to perform properly is tested. Owners/operators must obtain temporary permits that are enforced during this trial period.

Interim permit for UIC wells: The regulatory authority may issue a permit for a Class I UIC well (as defined in the Safe Drinking Water Act) within a State in which no UIC program has been approved or promulgated. Permit terms are not to exceed two years.

Research, development, and demonstration permits: A regulatory authority may issue such a permit for any innovative technology or process for which permit standards have not been developed in 40 CFR Part 264 or 266.

Post-closure permits: Land disposal facilities that leave wastes in place when they close must obtain a post-closure permit, specifying the requirements for proper post-closure care.

The *Permit Process*

- Preparing the application
- Conducting a pre-application meeting
- Submitting a permit application
- Reviewing the permit application
- Preparing the draft permit
- Taking public comment
- Finalizing the permit

The *permit process* is comprised of the seven key steps listed above, of which we have discussed the content to be addressed when preparing the application. Some facilities are subject to *expanded public participation* provisions. For these facilities, the applicant must hold at least one meeting with the public prior to submitting the Part B application. Pre-application meeting information (e.g., a summary, list of attendees, written comments) is submitted as an element of the Part B application.

After the permit application has been submitted, the regulator (and the public) review it for completeness. If it is considered incomplete, a notice of deficiency is sent to the applicant describing the additional information required in the application. After these omissions have been corrected, the application is considered complete and an in-depth evaluation of the application can begin.

If the regulators, after evaluating the application, decide to deny the permit, a letter of intent to deny is sent to the owner or operator. Otherwise, a draft permit is prepared. The draft permit includes technical requirements and other conditions applicable to the facility's operation. These other conditions include:

- general requirements, such as complying with all conditions of the permit; notifying EPA/State of planned alterations to the facility; providing EPA/State with relevant information on request; and certifying annually that a program is in place to reduce the volume and toxicity of waste; and
- case-by-case requirements, including schedules to bring facilities into compliance with corrective action schedules and specification of permit duration.

To inform the public that the permitting process is taking place, EPA/State issues a statement of basis/fact sheet. These detail information pertaining to the facility, the contents of the draft permit (or notice of intent to deny); and the procedures to be used in reaching the final administrative decision on the permit application. The public is given a period of 45 days to comment on both draft permits and notices of intent to deny. In some cases a public hearing may also be held. If substantial issues are raised during the comment period, the regulators must reopen/extend the comment period.

After the comment period closes, a response to all public comments is made and the regulators decide whether to issue the permit. Decisions may be appealed up to the level of judicial review.

Public Involvement

- The public must be notified at least 30 days prior to pre-application meetings.
- Regulators notify the public of the application.
- The public must be notified (by the regulators) and allowed at least 45 days to comment on a draft permit/application denial.
- The public must be notified (by the regulators) at least 30 days before a public hearing.

Requirements for public involvement are outlined in 40 CFR 124.10. Additional procedures applicable to RCRA permits are outlined in 40 CFR Part 124, Subpart B. With the exception of applicants notifying persons of the pre-application meeting, notification is provided by the regulators and is sent to:

- Federal, State, and/or local agencies; and
- Persons that expressed an interest/participated during previous permitting activities.

Notice is provided using newspaper advertisements, visible and accessible signs posted at or near the facility, and broadcasts on the local radio or television stations.

Public Involvement (cont'd)

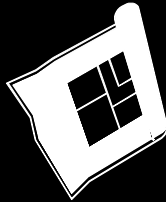
- Any interested person may submit written comments.
- A written request stating the issues to be raised at the hearing must be submitted for a public hearing.
- Public comment may be reopened to expedite the decision-making process.
- The public must be notified of final permit decisions.
- Permits are effective 30 days after notification of the decision to grant the permit.

These requirements for public comment are outlined in 40 CFR 124.11.

Reopening provisions are outlined in 40 CFR 124.14.

Permit issuance and effective date requirements are outlined in 40 CFR 124.15.

Permit Modifications (OR Nothing Stays the Same) (40 CFR 270.41)



- Alterations of facility or activity
- Availability of new information that would have justified the application of different permit conditions
- New requirements
- Good cause (i.e., act of God, strike, etc.) to modify compliance schedules

Once a permit is issued, the facility must comply with its specific requirements and conditions. Deviations from the permit constitute a violation, yet many changes can occur during the term of a permit. For example, regulatory and operational changes could result in the management of a waste not identified in the permit. To be in compliance, facilities must seek permit modifications so that the permit reflects facility activities.

In addition to the causes listed above, a regulatory authority may also modify a permit in lieu of terminating it for any of the reasons listed in 40 CFR 270.43 (i.e., noncompliance with permit, failure of permittee to disclose facts, misrepresentation of facts, or permitted activity that is deemed to threaten human health and the environment).

Classes of Modifications: Examples

- CLASS 1
 - Administrative and informational changes
 - Equipment replacement or upgrade
- CLASS 2
 - Changes in number, location, depth, or design of wells
 - Extension of the post-closure care period
- CLASS 3
 - Reduction in post-closure care period

The owner or operator must seek a modification of the permit to remain in compliance for any change at the permitted facility that constitutes a change in the terms or conditions of the permit. (40 CFR 270.42)

The three classes of permit modification correspond to the importance of the proposed change. Class 1 is least important, and Class 3 is most important. Appendix 1 to 40 CFR 270.42 provides a list of types of changes with a class number for each. The appendix is divided into categories of changes and lists particular changes within them. For instance, if you wanted to know what class of modification is associated with a change in the addition of surface impoundment units you would look under Surface Impoundments and find that such a change is a Class 3 modification. If a modification is not among those listed, it must be considered a Class 3 modification unless EPA/State approves its designation as Class 1 or 2.

The classification of the modification is important because it defines the complexity of the process of obtaining the modification. For example, a Class 1 modification requires notification of parties on the facility mailing list and appropriate State/local governments. On the other hand, a Class 3 modification requires, in addition, publication of the intent to modify the permit in a major local newspaper.

What Else Does the Permit Require?

Corrective Action

- Corrective action requirements are imposed through the permit or, for interim status facilities, an enforcement order
- Permits must contain schedules of compliance to address releases
- Corrective action efforts around the country may encompass thousands of TSDFs

To obtain a RCRA permit, an operating hazardous waste management facility must provide information to EPA on whether any of its solid waste management units* (SWMUs), whether closed or in active use, are releasing hazardous constituents. [40 CFR 270.14(d)] Owners and operators of TSDFs are required to take corrective action as necessary to protect human health and the environment for all releases of hazardous waste or constituents from any SWMU at the facility, regardless of when waste was placed in the unit.

40 CFR 264.101 states that corrective action for SWMUs will be specified in the permit, and that the permit will contain schedules of compliance for corrective action (where such corrective action cannot be completed before issuance of the permit). In addition, the owner/operator is responsible for implementing corrective actions beyond the facility boundary where necessary. The *next module* will explore RCRA corrective action and compare and contrast RCRA cleanup requirements against response actions taken under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

* A solid waste management unit can be any discernible unit including any tank, lagoon, waste pile, or other unit where any solid waste was placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste and includes any area at a facility at which solid wastes have been routinely and systematically released.

Permitting in Summary

- RCRA provides two avenues for operation: interim status and final (part B) permitting.
- The permit establishes the conditions of operation for TSDFs.
- Permit requirements in 40 CFR Part 270 are tied to facility standards in 40 CFR Part 264.
- Permitting goes through a seven-stage process that affects regulator, permittee, and public.
- RCRA contains provisions for permit modifications.
- Permittees must consider corrective action.

Self-Assessment Questions: Permitting Module

I. Circle the correct answer(s).

1. With some exceptions, persons that treat, store, or dispose of hazardous waste are typically:
 - a. Very well organized
 - b. Universal waste handlers
 - c. Required to obtain a permit
 - d. Conditionally exempt from regulation
2. Facilities that comply with hazardous waste generator provisions are:
 - a. Viewed by environmental organizations as polluters
 - b. Not required to obtain a permit
 - c. Typically operated by lawyers
 - d. Subject to corrective action
3. To be eligible for interim status, facilities must:
 - a. Call the regulators and give them a “heads-up”
 - b. Submit both a *Notification of Hazardous Waste Activity* and a Part B application
 - c. Be in existence on the effective date of a statutory or regulatory amendment that subjects the facility to RCRA permitting
 - d. Be able to construct their hazardous waste management unit quickly and cost effectively
4. Subpart X permits are issued to:
 - a. Generators confronting emergency situations
 - b. Heavy metal rock bands
 - c. Destination facilities managing universal wastes
 - d. Hazardous waste management units that do not qualify as containers, tanks, surface impoundments, landfills, etc.

II. Complete the statement.

1. List four types of units that are excluded from hazardous waste permitting requirements.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
2. Successful decontamination and/or disposal of all waste inventory and structures associated with a hazardous waste management unit is referred to as _____.
3. List four other types of hazardous waste permits.
 - a. _____
 - b. _____
 - c. _____
 - d. _____

Self-Assessment Questions: Permitting Module

III. Complete the Matching Set

- | | |
|--|--|
| <input type="checkbox"/> 1. Part B permit | a. Exempt from subtitle C permitting |
| <input type="checkbox"/> 2. Eligibility for this approach hinges on being in existence on the effective date of a new regulation | b. Permitting process |
| <input type="checkbox"/> 3. Wastewater treatment units | c. Closure/post-closure provisions |
| <input type="checkbox"/> 4. Process consisting of seven key steps | d. Interim status |
| <input type="checkbox"/> 5. Solid waste management unit (SWMU) | e. Establishes administrative and operating conditions for hazardous waste TSDFs |
| | f. Addressed during RCRA permitting |
| | g. Recyclable materials |

IV. True/False

1. ☐ To receive interim status, an existing TSD facility must submit to the regulators both a notification and a Part A permit application within a specified period of time.
2. ☐ All hazardous waste TSDFs must comply with general facility standards.
3. ☐ LOIS (loss of interim status) provisions apply to TSDFs that came into existence after November 8, 1984.

Self-Assessment Answers: Permitting Module

I. Circle the correct answer(s).

1. With some exceptions, persons that treat, store, or dispose of hazardous waste are typically: [See P-2]
 - a. Very well organized
 - b. Universal waste handlers
 - c. **Required to obtain a permit**
 - d. Conditionally exempt from regulation
2. Facilities that comply with hazardous waste generator provisions are: [See P-3]
 - a. Viewed by environmental organizations as polluters
 - b. **Not required to obtain a permit**
 - c. Typically lawyers
 - d. Subject to corrective action
3. To be eligible for interim status, facilities must: [See P-4, P-5, and P-11]
 - a. Call the regulators and give them a “heads-up”
 - b. Submit both a *Notification of Hazardous Waste Activity* and a Part B application
 - c. **Be in existence on the effective date of a statutory or regulatory amendment that subjects the facility to RCRA permitting**
 - d. Be able to construct their hazardous waste management unit quickly and cost effectively
4. Subpart X permits are issued to: [See P-17 to P-18]
 - a. Generators confronting emergency situations
 - b. Heavy metal rock bands
 - c. Destination facilities managing universal wastes
 - d. **Hazardous waste management units that do not qualify as containers, tanks, surface impoundments, landfills, etc.**

II. Complete the statement.

1. List four types of units that are excluded from hazardous waste permitting requirements. [See P-3]
 - a. Generator accumulation tanks, containers, drip pads, containment buildings
 - b. Totally enclosed treatment units
 - c. Wastewater treatment units
 - d. Elementary neutralization units
 - e. Recycling units
 - f. Emergency response containment systems
 - g. Transfer facilities
 - h. Units managing certain recyclable materials
2. Successful decontamination and/or disposal of all waste inventory and structures associated with a hazardous waste management unit is referred to as clean closure. [See P-14]

Self-Assessment Answers: Permitting Module

3. List four other types of hazardous waste permits. [See P-19]
- a. Permit-by-rule
 - b. Emergency permits
 - c. Hazardous waste incinerator, boiler and industrial burner, and land treatment demonstration permits
 - d. Interim permits for UIC wells
 - f. Research, development, and demonstration (RD&D) permits
 - g. Post-closure permits

III. Complete the matching set.

- | | | | |
|----------|---|----|---|
| <u>e</u> | 1. Part B permit [See P-15] | a. | Exempt from subtitle C permitting |
| <u>d</u> | 2. Eligibility for this approach hinges on being in existence on the effective date of a new regulation [See P-4 and P-5] | b. | Permitting process |
| <u>a</u> | 3. Wastewater treatment units [See P-3] | c. | Closure/post-closure provisions |
| <u>b</u> | 4. Process consisting of seven key steps [See P-20] | d. | Interim status |
| <u>f</u> | 5. Solid waste management unit (SWMU) [See P-25] | e. | Establishes administrative and operating conditions for hazardous waste TSDFs |
| | | f. | Addressed during RCRA permitting |
| | | g. | Recyclable materials |

IV. True/False

- 1. T To receive interim status, an existing TSD facility must submit to the regulators both a notification and a Part A permit application within a specified period of time. [See P-5]
- 2. T All hazardous waste TSDFs must comply with general facility standards. [See. P-8]
- 3. F LOIS (loss of interim status) provisions apply to TSDFs that came into existence after November 8, 1984. [See P-11]

PERMITTING MODULE
STATUTORY-REGULATORY CITATION/KEY WORD INDEX

Statutory/Regulatory Citations

<u>Citation(s)</u>	<u>Page Number(s)</u>
40 CFR 124.10	P-21
40 CFR 124.11	P-22
40 CFR 124.14	P-22
40 CFR 124.15	P-22
40 CFR Part 124	P-12
40 CFR Part 124, Subpart B	P-21
40 CFR 260.10	P-3
40 CFR 262.34	P-3
40 CFR 264.1(g)	P-3
40 CFR 264.101	P-25
40 CFR 264.177	P-15
40 CFR 264.1082(c)(1)	P-10
40 CFR 265.1(c)	P-3
40 CFR 265.1083(c)(1)	P-10
40 CFR Part 264	P-8, P-9, P-12, P-15
40 CFR Part 264, Subparts I - N	P-15
40 CFR Part 264, Subpart O	P-16
40 CFR Part 264, Subparts AA to DD	P-16
40 CFR Part 264, Subpart X	P-17 and P-18
40 CFR Part 265	P-5, P-7 to P-10
40 CFR Part 265, Subparts I -N	P-9
40 CFR Part 265, Subparts O-R, W	P-10
40 CFR Part 265, Subparts AA to DD	P-10
40 CFR Part 266	P-3
40 CFR 270.10(e)	P-4
40 CFR 270.10(f)	P-4
40 CFR 270.13	P-6
40 CFR 270.14	P-12, P-13, and P-16
40 CFR 270.15 -.21, .26	P-12 and P-15
40 CFR 270.24 - .27	P-12 and P-16
40 CFR 270.41	P-23
40 CFR 270.42	P-24
40 CFR 270.42, Appendix 1	P-24
40 CFR 270.43	P-23
40 CFR 270.73(d)	P-11
40 CFR Part 270	P-5 and P-15
40 CFR Part 270, Subpart G	P-5
RCRA Section 3010	P-4

Alphabetical Listing

Key Word(s)

Air emission standards	P-10
Air emission controls	P-16
Boilers and industrial furnace permits	P-19
CERCLA	P-25
Clean closure	P-14
Closure plan	P-13 and P-14
Closure	P-14
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Facility	P-2
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LOIS (loss of interim status) provisions	P-4 and P-11
Miscellaneous units	P-17 and P-18
New facilities	P-4
<i>Notification of Regulated Waste Activity</i> (Form 8700-12)	P-4
Part A application	P-4 to P-8
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Waste piles	P-9 and P-15
Wastewater treatment unit	P-3

Permitting Module Cross-Links

Module Page/Line	Cross-Link Language	Resource/Document
P-3/Slide, Line 1	"Exclusion from Permitting"	Types of RCRA Permits, DOE/EH-413/9715; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permits.pdf
P-3/Slide, Line 3	"recyclable materials"	Requirements for the Recycling of Hazardous Waste; DOE/EH-231-001/0990; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/recycle.pdf
P-3/Slide, Line 4	"Generators"	Hazardous Waste Generator Requirements, DOE/EH-231-055/1194 (Revised August 1997); http://tis-nt.eh.doe.gov/oepa/guidance/rcra/gener_rv.pdf
P-3/Slide, Line 11	"manifested"	Manifest Requirements, DOE/EH-231-038/0394 (revised); http://tis-nt.eh.doe.gov/oepa/guidance/rcra/manif_rv.pdf
P-3/Notes, Line 1	"exclusions"	Exclusions and Exemptions from RCRA Hazardous Waste Regulation; DOE/EH-231-034/0593; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/exclude.pdf
P-3/Notes, Line 6	"recycling"	Requirements for the Recycling of Hazardous Waste; DOE/EH-231-001/0990; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/recycle.pdf
P-3/Notes, Line 11	"generators"	Hazardous Waste Generator Requirements, DOE/EH-231-055/1194 (Revised August 1997); http://tis-nt.eh.doe.gov/oepa/guidance/rcra/gener_rv.pdf
P-4/Slide, Line 4	"interim status"	Loss of Interim Status (LOIS) under RCRA, DOE/EH-231-0181/0992; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/lois.pdf
P-4/Slide, Line 6	"Part B permit"	RCRA Permitting Guide for Hazardous and Radioactive Mixed Waste Management Facilities, DOE/EH(RCRA)9705; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permit_a.pdf
P-4/Notes, Line 16	"lose interim status"	Loss of Interim Status (LOIS) under RCRA, DOE/EH-231-0181/0992; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/lois.pdf
P-4/Notes, Line 17	"permit"	RCRA Permitting Guide for Hazardous and Radioactive Mixed Waste Management Facilities, DOE/EH(RCRA)9705; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permit_a.pdf

P-5/Slide, Line 1	"What Must I Do for Interim Status"	RCRA Permitting Guide for Hazardous and Radioactive Mixed Waste Management Facilities, DOE/EH(RCRA)9705; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permit_ch1.PDF
P-5/Notes, Line 9	"permitting process"	RCRA Permitting Guide for Hazardous and Radioactive Mixed Waste Management Facilities, DOE/EH(RCRA)9705; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permit_ch2.PDF
P-6/Slide, Lines 1-2	"Part A Application"	RCRA Permitting Guide for Hazardous and Radioactive Mixed Waste Management Facilities, DOE/EH(RCRA)9705; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permit_ch2.PDF
P-6/Notes, Line 1	"Part A applications"	RCRA Permitting Guide for Hazardous and Radioactive Mixed Waste Management Facilities, DOE/EH(RCRA)9705; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permit_ch2.PDF
P-7/Slide, Line 1	"Part A Application"	RCRA Permitting Guide for Hazardous and Radioactive Mixed Waste Management Facilities, DOE/EH(RCRA)9705; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permit_ch2.PDF
P-8/Slide, Line 2	"General Standards"	General Facility Standard Requirements, DOE/EH-231-043/1294 [NOT available on the OEPA Website]
P-8/Slide, Line 4	"Waste analysis plan"	Preparation of RCRA Waste Analysis Plans (Interim), DOE/EH-0306 [NOT available on the OEPA Website]
P-8/Slide, Line 6	"inspection"	Federal Environmental Inspections Handbook, DOE/EH-0220; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/inspect_all.pdf
P-8/Slide, Line 8	"Preparedness and prevention"	RCRA Contingency Plans and Emergency Procedures, DOE/EH-231-006/0991 http://tis-nt.eh.doe.gov/oepa/guidance/rcra/cplans.pdf
P-8/Slide, Line 9	"Contingency planning"	Preparation of RCRA Contingency Plans, DOE/EH-0274 [NOT available on the OEPA Website]
P-8/Slide, Line 10	"Manifests"	Manifest Requirements, DOE/EH-231-038/0394 (revised); http://tis-nt.eh.doe.gov/oepa/guidance/rcra/manif_rv.pdf
P-8/Notes, Line 5	"general facility requirements"	General Facility Standard requirements, DOE/EH-231-043/1294 [NOT available on the OEPA Website]

P-9/Slide, Line 3	“Containers”	Management of Hazardous Waste Containers & Container Storage Areas under RCRA, DOE/EH-0333; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/container/contain_all.pdf
P-9/Slide, Line 4	“Tanks”	Resource Conservation and Recovery Act Hazardous Waste Tank Systems, DOE/EH-413/9716; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/tanks/tanks_all.pdf
P-9/Notes, Line 4	"container storage requirements"	Management of Hazardous Waste Containers & Container Storage Areas under RCRA, DOE/EH-0333; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/container/contain_all.pdf
P-10/Slide, Line 3	“Incinerators”	Consolidated Departmental Response to Revised Standards for Hazardous Waste Combustors; Notice of Proposed Rulemaking (NPRM), 61 FR 17358, 11/7/96; http://tis-nt.eh.doe.gov/oepa/comments/rcra/cbs-rule.pdf
P-10/Slide, Line 10	"AA,”	RCRA Air Emission Standards for Hazardous Waste Treatment, Storage, and Disposal Facility (TSDF) Process Vents, DOE/EH-231-020/0193; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/vents.pdf
P-10/Slide, Line 11	“BB”	RCRA Air Emission Standards for Hazardous Waste Treatment, Storage, and Disposal Facility (TSDF) Equipment Leaks, DOE/EH-231-019/0193; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/equipmnt.pdf
P-10/Slide, Line 11	“CC”	Organic Air Emission Standards; Revised Final Rule Issued, RCRA Regulatory Bulletin; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/ccregbl2.pdf
P-10/Notes, Line 7	"air emission standards"	RCRA Subpart CC Organic Air Emission Standards Technical Amendment Questions and Answers; DOE/EH (RCRA)-9701; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/subpartcc.pdf
P-10/Notes, Line 7	“tanks”	RCRA Subpart CC Organic Air Emission Standards: Tanks, DOE/EH-413/9801; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/ccinfobrief.pdf
P-10/Notes, Line 8	“containers”	RCRA Subpart CC Organic Air Emission Standards: Containers, DOE/EH-413/9801; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/cccontainers.pdf
P-11/Notes, Line 1	“HSWA”	OEPA Environmental Law Summary: Resource Conservation and Recovery Act; http://tis-nt.eh.doe.gov/oepa/law_sum/RCRA.HTM
P-11/Slide, Lines 6-7	"lost interim status"	Loss of Interim Status (LOIS) under RCRA, DOE/EH-231-0181/0992; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/lois.pdf

P-12/Slide, Line 2	"Part B Permit"	RCRA Permitting Guide for Hazardous and Radioactive Mixed Waste Management Facilities, DOE/EH(RCRA)9705; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permit_ch2.PDF
P-12/Slide, Lines 8-9	"general facility requirements"	General Facility Standard Requirements, DOE/EH-231-043/1294 [NOT available on the OEPA Website]
P-12/Notes, Lines 1-2	"Part B permit application"	RCRA Permitting Guide for Hazardous and Radioactive Mixed Waste Management Facilities, DOE/EH(RCRA)9705; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permit_ch2.PDF
P-12/Notes, Line 6	"general facility requirements"	General Facility Standard Requirements, DOE/EH-231-043/1294 [NOT available on the OEPA Website]
P-13/Slide, Line 1	"Content of Part B"	RCRA Permitting Guide for Hazardous and Radioactive Mixed Waste Management Facilities, DOE/EH(RCRA)9705; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permit_ch2.PDF
P-13/Slide, Line 4	"Closure plan"	RCRA Closure and Post-Closure Plans, DOE/EH-231-009/1291; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/pcplans.pdf
P-13/Slide, Line 5	"Inspection schedule"	Federal Environmental Inspections Handbook, DOE/EH-0220; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/inspect_all.pdf
P-13/Slide, Line 6	"Chemical and physical analysis of wastes"	Preparation of RCRA Waste Analysis Plans (Interim), DOE/EH-0306 [NOT available on the OEPA Website]
P-13/Slide, Line 9	"Groundwater monitoring"	Ground-Water Monitoring Under RCRA, DOE/EH-231-039/1193; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/monitor.pdf
P-14/Slide, Line 1	"closure plan"	RCRA Closure and Post-Closure Plans, DOE/EH-231-009/1291; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/pcplans.pdf
P-14/Notes, Line 5- 6	"closure of the unit"	Closure of Hazardous and Mixed Waste Management Units at DOE Facilities, DOE/EGD(RCRA)-002/0690 [NOT available on the OEPA Website]
P-14/Notes, Line 6	"closure plan"	RCRA Closure and Post-Closure Plans, DOE/EH-231-009/1291; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/pcplans.pdf
P-14/Notes, Line 12	"clean closure"	RCRA Clean Closure Equivalency Demonstrations, DOE/EH-231-010/1291; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/equivdem.pdf
P-14/Notes, Line 18	"post-closure care permit"	RCRA Post-Closure Permits, DOE/EH-231-021/0593 [NOT available on the OEPA Website]

P-15/Notes, Line 3	"closure standards"	Closure of Hazardous and Mixed Waste Management Units at DOE Facilities, DOE/EGD(RCRA)-002/0690 [NOT available on the OEPA Website]
P-15/Notes, Line 10	"incompatible wastes"	Ignitable, Corrosive, Reactive, and Incompatible Wastes; DOE/EH-231-054/1294; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/ignit.pdf
P-15/Notes, Line 12	"ignitable or reactive wastes"	Ignitable, Corrosive, Reactive, and Incompatible Wastes; DOE/EH-231-054/1294; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/ignit.pdf
P-16/Slide, Line 3	"Subpart O"	Types of RCRA Permits, DOE/EH-413/9715; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permits.pdf
P-16/Slide, Line 4	"Subpart AA"	RCRA Air Emission Standards for Hazardous Waste Treatment, Storage, and Disposal Facility (TSDF) Process Vents, DOE/EH-231-020/0193; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/vents.pdf
P-16/Slide, Line 5	"Subpart BB"	RCRA Air Emission Standards for Hazardous Waste Treatment, Storage, and Disposal Facility (TSDF) Equipment Leaks, DOE/EH-231-019/0193; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/equipmnt.pdf
P-16/Slide, Line 8	"Subpart CC"	Organic Air Emission Standards; Revised Final Rule Issued, RCRA Regulatory Bulletin; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/ccregbl2.pdf
P-16/Notes, Line 5	"Recent amendments"	RCRA Subpart CC Organic Air Emission Standards Technical Amendment Questions and Answers; DOE/EH (RCRA)-9701; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/subpartcc.pdf
P-19/Slide, Line 1	"Types of Permits"	Types of RCRA Permits, DOE/EH-413/9715; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permits.pdf
P-19/Slide, Line 10	"Post-closure permits"	RCRA Permitting Guide for Hazardous and Radioactive Mixed Waste Management Facilities, DOE/EH(RCRA)9705; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permit_ch5.pdf
P-19/Notes, Line 25	"Post-closure permits"	RCRA Post-Closure Permits, DOE/EH-231-021/0593 [NOT available on OEPA Website]

P-20/Slide, Line 1	“permit process”	RCRA Permitting Guide for Hazardous and Radioactive Mixed Waste Management Facilities, DOE/EH(RCRA)9705; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permit_a.pdf
P-20/Notes, Line 1	“permit process”	RCRA Permitting Guide for Hazardous and Radioactive Mixed Waste Management Facilities, DOE/EH(RCRA)9705; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permit_a.pdf
P-20/Notes, Lines 2-3	“expanded public participation provisions”	RCRA Expanded Public Participation - Final Rule, RCRA Regulatory Bulletin, January 31, 1997; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/public_p.pdf
P-21/Slide, Line 1	“Public Involvement”	RCRA Expanded Public Participation - Final Rule, RCRA Regulatory Bulletin, January 31, 1997; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/public_p.pdf
P-22/Slide, Line 1	“Public Involvement”	RCRA Expanded Public Participation - Final Rule, RCRA Regulatory Bulletin, January 31, 1997; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/public_p.pdf
P-23/Slide, Line 1	“Permit Modifications”	RCRA Permitting Guide for Hazardous and Radioactive Mixed Waste Management Facilities, DOE/EH(RCRA)9705; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permit_ch4.PDF
P-24/Slide, Line 1	“Classes of Modifications”	RCRA Permitting Guide for Hazardous and Radioactive Mixed Waste Management Facilities, DOE/EH(RCRA)9705; http://tis-nt.eh.doe.gov/oepa/guidance/rcra/permit_ch4.PDF
P-25/Slide, Line 2	“Corrective Action”	Corrective Action module, Page 1
P-25/Notes, Line 12	“next module”	Corrective Action module, Page 1